A Note On the Incidence of Rheumatic Fever in Los Angeles

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SUMMARY

Nationwide campaigns to alert the public to the dangers of rheumatic heart disease carry the hazard that parents in some localities may become more alarmed than is warranted by the local rate of incidence of the disease; and the alarm of the parent may harm the child.

In such circumstances physician and patient alike might be reassured if it could be ascertained that the incidence of rheumatic fever in a given community was relatively low.

Application to the Los Angeles area of a statistical formula worked out from Coombs' data on the incidence and death rate from the disease in England and from Ash's data in Philadelphia, gave indication that the incidence of rheumatic fever in all age groups in Los Angeles is approximately 68 new cases a year—a relatively favorable figure in a population approaching two million.

ANY campaign to acquaint the laity with knowledge concerning disease carries the danger of misinterpretation. This is particularly true if a disease is characterized by geographical variations in incidence and in symptomatology. Thus the dissemination of such information as may be necessary to alert the public to the dangers of rheumatic fever in the state of New York would create unnecessary apprehension and needless worry among the population of the state of New Mexico, where the disease is comparatively rare. Additional confusion results from the absence of a specific test for the diagnosis of mild cases of rheumatic fever.

Recent publicity has placed emphasis on many minor signs and symptoms which may or may not be related to the rheumatic state. Prolonged minimal elevation of the temperature, easy fatigability, lack of appetite, failure to gain weight, anemia, nose bleeds, and attacks of tonsillitis are now subjects of tremendous concern. If, in addition to the above symptoms, some physician has mentioned the presence of a "heart murmur," the damage is practically irremediable. In such circumstances parent and child go from office to office and clinic to clinic, rarely reassured by a non-cardiac diagnosis and frequently confused by differences of medical opinion. The bad effect on the child goes without saying.

This situation, greatly aggravated by recent propaganda, was discussed by Coombs[3] 25 years ago in his authoritative monograph on rheumatic heart disease. He states: "It is such a serious matter to overlook a case of heart disease that many men go to the opposite extreme. They encounter something which they cannot quite explain away to their own satisfaction—a murmur, or some pulse irregularity —and, rather than fail to be the first in recognizing and proclaiming the presence of heart disease, they jump into almost as grievous an error in condemning an innocent person to inactivity by labelling him as a cardiac invalid. This is particularly to be deprecated in the case of children."

A knowledge of the incidence of rheumatic fever in any community is of great aid to the physician from a diagnostic point of view. Moreover, a low incidence enables him to allay the fears of the family. The variations in incidence become more apparent if one compares the death rate per 100,000 population due to rheumatic fever for all age groups in some widely separated areas. In 1941 the rate in Connecticut was 15.3 per cent, in Minnesota 20.6 per cent, and in New Mexico 6.6 per cent. A complete review of the geographical influences is contained in a recent survey by Collins.[2] The variations in symptomatology may be illustrated by the fact that whereas the presence of abdominal pain rightly provokes suspicion of rheumatic fever in children residing in Baltimore, Philadelphia and New York, it rarely signifies rheumatic infection in children who live in the cities of the southwest. During the past few years the distribution of information pertaining to diseases of the heart has produced so much anxiety among many of the families in Los Angeles that it seems necessary to attempt an estimate of the incidence of the disease in that area.

It is at once obvious that a complete record of all cases cannot be obtained, for many are never reported, some are erroneously diagnosed and others are controversial borderline cases in which the diagnosis remains in doubt. This analysis, therefore, was limited to the number of deaths due to rheumatic fever in individuals under 19 years of age during the five-year period 1939-1943. From this figure it is possible to estimate the incidence of the disease, for according to Coombs, 11.2 per cent of the cases of rheumatic heart disease in the childhood group are fatal within five years after the onset. The case fatality rate reported by Coombs in a ten-year survey is a little less than the figure obtained recently by Ash[1] in a study of rheumatic fever in Philadelphia.

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The records were obtained from the local hospitals and the figures were checked at the Los Angeles Vital Statistics Bureau. Each case was reviewed with respect to the generally accepted criteria for the clinical or pathological diagnosis of rheumatic fever. Limiting the study to cases in which the patient was under 19 years of age eliminated to a large extent the possibility of death from other causes. Moreover, it is generally believed that in approximately two-thirds of all cases of rheumatic fever the onset is during or prior to the fifteenth year of life. The choice of the years 1939 through 1943 was fortunate, as the huge movement of people about the country during the latter years of the war influenced the local incidence of many diseases. Cases in which rheumatic fever developed prior to residence in California were not included. This avoided the error of confusing a recurrence of infection with prolonged activity of the original attack. There were six children during this period who contracted rheumatic fever prior to residence in California and subsequently died here. Two cases in which the patients were born outside the state were included, however, because from the histories it was determined that no rheumatic infection had occurred previous to residence here. One of these two patients, who died at five years of age, had resided in Los Angeles since the age of six months, and the other, who died at 13 years of age, had resided in Los Angeles since the age of three. All of the remaining patients had lived their entire life in California. A total of 25 deaths occurred within the five-year period: Six in 1939, four in 1940, two in 1941, five in 1942, and eight in 1943.

Autopsies were performed in 17 cases. All the autopsy material showed one or more of the following findings: Aschoff bodies, typical rheumatic valvular vegetations; mitral stenosis excluding subacute bacterial endocarditis; and pancarditis with no bacteriologic evidence of pyogenic organisms or of tuberculosis. A one-year-old child who died with acute myocarditis was not included because microscopic sections at necropsy showed no evidence of Aschoff bodies or of valvular disease and clinically there were no characteristic extracardiac rheumatic manifestations.

In the seven cases in which autopsies were not done, one or more of the following findings were present either in the history or on examination: Migratory polyarthritis with acquired cardiac disease; Sydenham's chorea with acquired cardiac disease; recurrent rheumatic infections with cardiac involvement; a double mitral murmur associated with a broad notched or high P wave and a pathologic degree of right axis deviation; and acquired cardiac disease with one or more of the following manifestations: fever, persistent tachycardia, leukocytosis, subcutaneous nodules, anemia, and an elevation of the sedimentation rate on repeated observations.

All of the 25 patients were hospitalized one or more times and received prolonged bed rest followed in some instances by brief care at a convalescent home. The usual treatment with salicylates, digitalis, transfusions and sedation was employed as the indications appeared. The majority were patients in the medically indigent group and approximately half of them were Mexicans. A few patients died during what appeared to be a prolonged initial attack of rheumatic heart disease; the remainder died with recurrences of the infection. Eighteen patients died between the ages of six and 13 years. Four patients were under six years of age and three were over 13 years of age at death.

On the basis of Coombs' estimate the average case fatality rate of five deaths per year reflects an average annual incidence (new cases) in this age group of about 44 cases. Since Coombs' statistics were based on 218 cases of undoubted cardiac infection and inasmuch as he encountered approximately one case in which there was suspicion of rheumatic fever to every two cases in which the diagnosis was incontrovertible, an additional 22 "suspicious cases" might safely be estimated to occur annually. Unmistakable valvular fibrosis developed in the course of ten to 16 years after the onset in only one-third of the "suspicious cases" in Coombs' series. Accordingly, the addition of one-third of the number of "suspicious cases" increases the annual incidence in this age group to 51 cases. If one accepts the assumption that in two-thirds of all cases of rheumatic fever the onset is in this age group, then the addition of a third of 51, or 17, brings the total number of new cases annually, in all age groups, to approximately 68.

The results are subject to criticism on three counts:

1. It appears likely that a milder type of the disease exists in Los Angeles and hence a case fatality rate of 11.2 per cent may not be applicable.

2. It is possible that persons in whom the disease developed while they resided in Los Angeles subsequently died in other states or in other cities within California.

3. In the last two or three years there has been an increase in the population of Los Angeles and a trend toward a semi-industrial character, both of which might bring an increased incidence of rheumatic fever.

Nevertheless, in a city with a population approaching two million, the apprehension concerning rheumatic fever appears out of proportion to the incidence of the disease.

REFERENCES

1. Ash, R.: Discussion of article by Weston, W., Jr.: Journal of American Medical Association, 137:675, 1948.

2. Collins, S. D.: The incidence of rheumatic fever as recorded in general morbidity surveys of families, Supplement No. 198 to the Public Health Reports, 1947.

3. Coombs, C. F.: Rheumatic Heart Disease, John Wright & Sons, Ltd., Bristol, 1924.